



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-H BYPASS RATIO: 9.6
 UNIQUE ID NUMBER: 11RR054 PRESSURE RATIO (π_{co}): 38.3
 COMBUSTOR: Phase5 Tiled
 ENGINE TYPE: TF RATED THRUST (F_{oo}) (kN): 286.7

REGULATORY DATA **** DATA SUPERSEDED **** SEE FOLLOWING UID FOR REVISED DATA: **12RR060**

| CHARACTERISTIC VALUE: | HC | CO | NO _x | SMOKE NUMBER |
|--|-----|------|-----------------|--------------|
| D _p /F _{oo} (g/kN) or SN | 0.1 | 14.4 | 52.9 | 5.8 |
| AS % OF ORIGINAL LIMIT | 0.6 | 12.2 | 45.3 | 32.4 |
| AS % OF CAEP/2 LIMIT (NO _x) | | | 56.7 | |
| AS % OF CAEP/4 LIMIT (NO _x) | | | 63.2 | |
| AS % OF CAEP/6 LIMIT (NO _x) | | | 69.9 | |
| AS % OF CAEP/8 LIMIT (NO _x) | | | 79.2 | |

DATA STATUS

- PRE-REGULATION
 x CERTIFICATION
 - REVISED (SEE REMARKS)

TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES
 x DEDICATED ENGINES TO PRODUCTION STANDARD
 - OTHER (SEE REMARKS)

EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE
 (ANNEX 16 VOLUME II)

CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)
 x OUT OF PRODUCTION (DATE: -)
 - OUT OF SERVICE (DATE: -)

MEASURED DATA

| MODE | POWER SETTING (%F _{oo}) | TIME (minutes) | FUEL FLOW (kg/s) | EMISSIONS INDICES (g/kg) | | | SMOKE NUMBER |
|--|-----------------------------------|----------------|------------------|--------------------------|----------|-----------------|--------------|
| | | | | HC | CO | NO _x | |
| TAKE-OFF | 100 | 0.7 | 2.070 | 0.00 | 0.49 | 40.89 | 3.7 |
| CLIMB OUT | 85 | 2.2 | 1.710 | 0.00 | 0.43 | 31.75 | 4.4 |
| APPROACH | 30 | 4.0 | 0.583 | 0.00 | 0.88 | 12.72 | 2.6 |
| IDLE | 7 | 26.0 | 0.226 | 0.08 | 10.11 | 5.14 | 0.6 |
| LTO TOTAL FUEL (kg) or EMISSIONS (g) | | | 73 | 29 | 3826 | 14312 | - |
| NUMBER OF ENGINES | | | | 3 | 3 | 3 | 3 |
| NUMBER OF TESTS | | | | 5 | 5 | 5 | 5 |
| AVERAGE D _p /F _{oo} (g/kN) or AVERAGE SN (MAX) | | | | 0.1 | 13.3 | 49.9 | 5.2 |
| SIGMA (D _p /F _{oo} in g/kN, or SN) | | | | 0.1 | 3.6 | 0.9 | 2.0 |
| RANGE (D _p /F _{oo} in g/kN, or SN) | | | | 0-0.2 | 8.5-16.7 | 49-51 | 3-8.2 |

ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS
 STAGE BLEED 0 (% CORE FLOW) AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

| | |
|----------------------|-----------------|
| BAROMETER (kPa) | 98.9-102.1 |
| TEMPERATURE (K) | 284.1-290.3 |
| ABS HUMIDITY (kg/kg) | 0.00432-0.00721 |

FUEL

| | |
|----------|------|
| SPEC | |
| H/C | 1.89 |
| AROM (%) | 16.7 |

MANUFACTURER: Rolls-Royce plc
 TEST ORGANIZATION: Rolls-Royce
 TEST LOCATION: Derby
 TEST DATES: 24/09/2009-09/06/2011

NO_x REGULATION PARAGRAPH

| | |
|---|-------------------|
| | 2.3.2 c) (CAEP/4) |
| x | 2.3.2 d) (CAEP/6) |
| | 2.3.2 e) (CAEP/8) |

REMARKS

1. Representative of Package B engines

Compliance with Fuel Venting requirements:

- ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)